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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,243	07/17/2003	Ashish D. Alawani	0140111	2882
25700	7590	04/06/2005		
FARJAMI & FARJAMI LLP 26522 LA ALAMEDA AVENUE, SUITE 360 MISSION VIEJO, CA 92691			EXAMINER LEVI, DAMEON E	
			ART UNIT	PAPER NUMBER
			2841	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,243

Applicant(s)

ALAWANI ET AL.

Examiner

Dameon E. Levi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 28 March 2005 Amendment.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-16, and 18-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwood US Patent 6335985 in view of Kinsman et al US PGPUB 2003/0104657 A1.

Regarding claim 1, Greenwood discloses a module comprising:

a surface mount component situated over a substrate(for example, see elements 40,12, Figs1-10) said surface mount component comprising a first terminal and a second terminal(for example, see elements 44, Figs 1-10) ;

a first and a second pad situated on said substrate, (for example, see elements 24, Figs 1-10) said first pad being connected to said first terminal and said second pad being connected to said second terminal(for example, see elements 24,44 Figs 1-10),

a solder mask trench (for example, see trench space filled by elements 52, Figs 1-10) situated underneath said surface mount component, wherein a bottom surface of said surface mount component and said top surface of said substrate form a moldable gap(for example, see elements 48, Figs 1-10) said moldable gap including said solder mask trench(for example, see elements 52, Figs 1-10),

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wherein said moldable gap and said solder mask trench facilitate a flow of a molding compound underneath said surface mount component and wherein said solder mask trench is filled with said molding compound (for example, see elements 52, Figs 1-10).

Greenwood does not expressly disclose wherein the solder mask trench is situated over a top surface of the substrate.

Kinsman et al discloses an apparatus wherein a solder mask trench is situated over a top surface of the substrate (for example, see element 35, Figs 3-6).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a solder mask trench over a top of the substrate as taught by Kinsman et al in the apparatus as taught by Greenwood as molding compound tend to better adhere to circuit board materials and provide better overall adhesion of the molding compound to the underlying substrate due to added contact area of the molding compound to board material by provision of the soldermask trench to the substrate (see Kinsman et al, page 3)

Regarding claim 3, Greenwood discloses wherein said moldable gap is filled with said molding compound (for example, see elements 52, Figs 1-10).

Regarding claim 4, Greenwood discloses further comprising an overmold, said overmold being situated over said surface mount component (for example, see elements 54, Figs 1-10).

Regarding claim 5, Greenwood discloses wherein said surface mount component is selected from the group consisting of a resistor, a capacitor, an

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inductor, a diplexer, a diode, and a SAW filter (for example, see elements 40, Figs 1-10, see columns 1-7, wherein the reference states that the surface mount component is a semiconductor chip or die and would necessarily, at least, comprise a resistor etc.).

Regarding claim 6, Greenwood discloses wherein said moldable gap has a height of between approximately 45.0 micrometers and 65.0 micrometers (for example, see elements 48, Figs 1-10, see columns 1-7).

Regarding claim 7, Greenwood discloses wherein said overmolded module is an MCM (for example, see elements 40, Figs 1-10, see columns 1-7).

Regarding claim 8, Greenwood discloses wherein said substrate comprises a laminate circuit board (for example, see elements 12, Figs 1-10, see columns 1-7).

Regarding claim 9, Greenwood discloses a module comprising-

a surface mount component situated over a substrate (for example, see elements 40, 12, Figs 1-10), said surface mount component comprising a first terminal and a second terminal (for example, see elements 44, Figs 1-10); a first and a second pad situated on said substrate (for example, see elements 24, Figs 1-10), said first pad being connected to said first terminal and said second pad being connected to said second terminal, (for example, see elements 24, 44 Figs 1-10); a moldable gap situated underneath said surface mount component, said moldable

gap comprising a solder mask trench (for example, see elements 48, see trench space filled by elements 52 Figs 1-10), wherein said moldable gap and said

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solder mask trench facilitate a flow of a molding compound underneath said surface mount component and wherein said solder mask trench is filled with said molding compound(for example, see elements 52, Figs 1-10).

Greenwood does not expressly disclose wherein the solder mask trench is situated over a top surface of the substrate.

Kinsman et al discloses an apparatus wherein a solder mask trench is situated over a top surface of the substrate(for example, see element 35, Figs 3-6).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a solder mask trench over a top of the substrate as taught by Kinsman et al in the apparatus as taught by Greenwood as molding compound tend to better adhere to circuit board materials and provide better overall adhesion of the molding compound to the underlying substrate due to added contact area of the molding compound to board material by provision of the soldermask trench to the substrate(see Kinsman et al, page 3)

Regarding claim 10, Greenwood discloses wherein said moldable gap is filled with said molding compound (for example, see elements 52, Figs 1-10).

Regarding claim 11, Greenwood discloses further comprising an overmold, said overmold being situated over said surface mount component (for example, see elements 54, Figs 1-10).

Regarding claim 12, Greenwood discloses wherein said overmold comprises said molding compound (for example, see elements 54, Figs 1-10, see columns 1-7).

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Regarding claim 13, Greenwood discloses wherein said moldable gap has a height of between approximately 45.0 micrometers and 65.0 micrometers (for example, see elements 48, Figs 1-10, see columns 1-7).

Regarding claim 14, Greenwood discloses wherein said surface mount component is selected from the group consisting of a resistor, a capacitor, an inductor, a diplexer, a diode, and a SAW filter (for example, see elements 40, Figs 1-10, see columns 1-7 wherein the reference states that the surface mount component is a semiconductor chip or die and would necessarily, at least, comprise a resistor etc).

Regarding claim 15, Greenwood discloses wherein said overmolded module is an MCM (for example, see elements 40, Figs 1-10, see columns 1-7).

Regarding claim 16, Greenwood discloses a module comprising:
a surface mount device situated over a substrate (for example, see elements 40, 12, Figs 1-10), said surface mount device comprising a plurality of terminals (for example, see elements 44, Figs 1-10); a plurality of pads situated on said substrate (for example, see elements 24, Figs 1-10), each of said plurality of pads being connected to a respective one of said plurality of terminals (for example, see elements 24, 44 Figs 1-10);
a solder mask trench situated underneath said surface mount device (for example, see elements 49, see trench space filled by elements 52 Figs 1-10), wherein said solder mask trench facilitates a flow of a molding compound underneath said surface mount component and wherein said solder mask trench is filled with said molding compound (for example, see elements 52, Figs 1-10).

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Greenwood does not expressly disclose wherein the solder mask trench is situated over a top surface of the substrate.

Kinsman et al discloses an apparatus wherein a solder mask trench is situated over a top surface of the substrate(for example, see element 35, Figs 3-6).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a solder mask trench over a top of the substrate as taught by Kinsman et al in the apparatus as taught by Greenwood as molding compound tend to better adhere to circuit board materials and provide better overall adhesion of the molding compound to the underlying substrate due to added contact area of the molding compound to board material by provision of the soldermask trench to the substrate(see Kinsman et al, page 3)

Regarding claim 18, Greenwood discloses wherein said surface mount device is a leadless surface mount device (for example, see elements 40, Figs 1-10, see columns 1-7).

Regarding claim 19, Greenwood discloses wherein said surface mount device comprises at least one component, said at least one component being selected from the group consisting of an active component and a passive component (for example, see elements 40, Figs 1-10, see columns 1-7).

Regarding claim 20, Greenwood discloses wherein said overmolded module is an MCM (for example, see elements 40, Figs 1-10, see columns 1-7).

Anderson et al discloses a leaded surface mount device (for example, see element 10, Figs 1-3).

Response to Arguments

Applicant's arguments with respect to claims 1,3-16,18-20 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dameon E. Levi whose telephone number is (571) 272-2105. The examiner can normally be reached on Mon.-Fri. (9:00 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272-1957. The


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fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dameon E Levi
Examiner
Art Unit 2841

DEL



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SUPERVISORY PATENT
EXAMINER